

Application No.: 10/525675
Docket No.: AD6925USPCT

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REMARKS

Claims 1-12 have been amended to clarify that the compositions of the invention are graft copolymers wherein the grafting agent is selected from the group consisting of fluorinated carboxylic acids, perfluorinated carboxylic acids and perfluoro polyether carboxylic acids of the formula $\text{CF}_3\text{--}[\text{CF}(\text{CF}_3)\text{--CF}_2\text{--O}]_n\text{CF}_2\text{CO}_2\text{H}$, where n is an integer from about 5 to about 50. Support for the amendments is found in the specification at page 5, line 22 – page 6, line 14.

New claims 13-16 have been added to claim certain preferred embodiments. Support for these claims is found on page 5, lines 10-21 and page 6, lines 7-10.

Claims 1-12 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,141,661 (DeRosa) and under 35 U.S.C. §103(a) as being unpatentable over Chou (WO/02/072648 A2) in view of DeRosa. Applicant requests reconsideration for the reasons set forth below.

Rejection Under 35 U.S.C. § 102(b)

It is stated in the Office Action that DeRosa discloses ethylene/ α -olefin polymers grafted with perfluoro substituted, ethylenically-unsaturated epoxides and then reacted with perfluoro-substituted nucleophiles. Applicant notes that the compositions disclosed in DeRosa have different chemical structures than those recited in the present claims. In the present invention the copolymer with which the grafting agent reacts is an ethylene glycidyl (meth)acrylate copolymer that has copolymerized units of ethylene and glycidyl (meth)acrylate comonomers. It is well known in the art that such polymers are prepared by a high-pressure copolymerization process (see attached Atochem technical literature describing Lotader® AX8840). Because of the nature of the comonomers and the high pressure process the resultant copolymer is not linear, but is instead highly branched. In contrast, the backbone copolymer disclosed in DeRosa is a linear ethylene α -olefin copolymer (see col. 2, l. 43 where DeRosa describes the copolymers as generally linear and rubbery). An additional distinction is that the epoxy groups in the DeRosa compositions do not reside on the polymer backbone, but on pendant chains that are grafted onto the backbone in a first grafting step. Then, the grafted polymer is further reacted with a fluorinated monomer. In the present invention, the epoxy group resides on the backbone polymer and directly

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reacts with the carboxylated fluorine-containing grafting agent. Thus, the polymer architecture of the DeRosa compositions is different from that of grafted compositions of the present invention.

In addition, the compositions of the present invention are formed from crystalline thermoplastic materials, whereas the compositions of DeRosa are graft copolymers where the backbone is an amorphous rubbery polymer.

Because the compositions of DeRosa and those of the present claims are distinct, it is submitted that the rejection under 35 U.S.C. § 102(b) is not warranted and it is respectfully requested that it be withdrawn.

Rejection Under 35 U.S.C. § 103(a)

Claims 1-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chou (WO/02/072648 A2) in view of DeRosa. It is stated in the Office Action that Chou discloses a fluorine containing ethylene copolymer obtained by copolymerization of ethylene, a fluorine-containing comonomer and glycidyl methacrylate and that the difference between the present claims and the disclosure of Chou is the requirement of a copolymer obtained by reacting with the specific fluorine-containing carboxylic acid in the present claims. It is also stated that it would be obvious to one of ordinary skill in the art to further react the ethylene copolymer with the perfluoro-substituted nucleophile and obtain the present claims.

Applicant respectfully disagrees with this analysis. The Chou reference discloses a polymer having a different structure than that of the backbone polymer of the presently claimed composition. Specifically, the backbone of the Chou compositions is composed of copolymerized units of ethylene, a fluorinated comonomer and glycidyl methacrylate. In the compositions of the present invention, the fluorinated comonomer is not copolymerized as a unit along the polymer backbone. It is grafted onto the polymer backbone by reaction with the epoxy groups of the glycidyl moieties on the polymer chain. The amendments to the claims specifically clarify this point and emphasize that the fluorinated compound acts as a grafting agent (i.e. an agent that introduces pendant fluorinated chains), and is thus not a comonomer polymerized into the backbone chain.

Further, combination of DeRosa and Chou will not produce the compositions as claimed by Applicant. Substitution of the Chou backbone polymer for the DeRosa backbone polymer will still require reaction with two further components, as taught

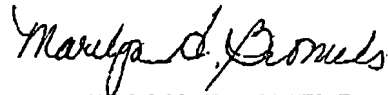
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by DeRosa, i.e. a perfluoro-substituted ethylenically unsaturated epoxy compound and a perfluoro-substituted nucleophile. Thus, Applicant's compositions will not be produced by combination of Chou and DeRosa. Applicant therefore submits that the rejection based on the combination of Chou and DeRosa does not teach compositions of the present claims and it is respectfully requested that this rejection be withdrawn.

It is believed that in view of the clarifying amendments and for the reasons set forth above, the application is now in condition for allowance.

Respectfully submitted,



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